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| EXAMINER | |
|---|---|
| CAVALLARI, DANIEL J | |

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/617,253 | CHOI ET AL. | |
| | Examiner | Art Unit | |
| | DANIEL CAVALLARI | 2836 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *09 May 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-16 and 18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7,9-15,18* is/are rejected.

7)☒ Claim(s) *8 and 16* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 5/9/2008 has been entered.

### *Response to Arguments*

Applicant's arguments with respect to claims 1-16 and 18 have been considered but are moot in view of the new ground(s) of rejection.

The indicated allowability of claim 14 is withdrawn in view of the newly discovered reference(s) to disclosed below. Rejections based on the newly cited reference(s) follow.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-3, 5, 6 & 9 rejected under 35 U.S.C. 103(a) as being unpatentable over Huh et al. (US 7,054,169) in view of Malik et al. (US 2003/0214822) and Gregorich (US 3,924,172).

In regard to Claim 1

A method of controlling a power supply, having a power switching unit, in an electronic machine using a host connected to the electronic machine, the method comprising:

- Transmitting received alternating current (AC) power (received via input "Vin", See fig 5) to the power switching unit (read on by 350) and simultaneously transforming the AC power into direct current (DC) power (via rectifier BR310).
- Determining whether the host (200) requests provision of the DC power to the electronic machine (device connected to output Vo (not shown)).
- Driving an integrated circuit (350) of the power switching unit using the AC power (via BR310, transformer L310 and switch MOS330) in response to determining that provision of the DC power to the electronic machine is requested (See Column 10, Lines 34-65).

Huh et al. (hereinafter referred to as Huh) fails to teach:

1. A "PWM-IC"
2. driving an input of a pulse width modulation-integrated circuit.

Huh teaches an integrated circuit that controls the duty cycle of a wave produced from a switched transformer (see figures 1 and 3) however fails to explicitly state that "pulse width modulation" is used to convert the DC power to AC power using the switch and transformer (see figure 1).

Malik et al. (hereinafter referred to as Malik) teaches converter DC power into AC power using a switched transformer and pulse width modulation (see figure 2).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to perform the power conversion using pulse width modulation as taught by Malik in the invention of Huh. The motivation would have been to use a conversion technique that is well known in the art and reliable at producing AC power via a switched transformer configuration.

Huh teaches the integrated circuit powered from the output of the DC rectifier and not from the AC power source. Gregorich teaches a power supply system in which the integrated pulse circuitry is powered via the AC input lines and the AC power is converted in DC within the integrated circuit (via 45, figure 2 and see "control pulse circuitry (7), figure 1).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to power the integrated circuit of Huh via the AC supply line and convert the power within the integrated circuit, as taught by Gregorich. The motivation would have been to increase reliability and flexibility of the system by having a rectifier circuit solely dedicated to the pulse circuitry.

Huh further teaches:

In regard to Claim 2

An apparatus for controlling a power supply, having a power switching unit, in an electronic machine using a host connected to the electronic machine, the apparatus comprising

- A power rectification unit (BR310) transforming received alternating current (AC) (via Vin) power into direct current (DC) power and smoothing the DC power (via C310)

- A power switching unit (350), driven by the AC power and having a pulse width modulation integrated circuit (PWM-IC) that is switched on or off to control provision of the DC power to the electronic machine (200) when the host (load connected at Vo) requests provision of DC power to the electronic machine (via the power (or lack of power) drawn by the load)
- An AC power connection unit (read on by the leads connecting the bridge rectifier with the AC source "Vin") receiving the AC power and outputting the AC power to the power switching unit
- A power supply control unit (220) controlling the operation of the power switching unit, regardless of whether power is received by the power switching circuit.

In regard to Claim 3

- Wherein the power rectification unit comprises an electrolytic capacitor that smoothes rectified power and has a discharge line that is grounded to prevent discharge of charges stored in the electrolytic capacitor (See Figure 5).

In regard to Claim 5

- A first node (read on by the bottom AC power connection) connected to an AC power supply source (Vin) (See figure 5) and a second node connected to the power switching unit (Vcc 350) and a resistor (R312) between the first node and the second node, wherein the AC power connection unit receives the AC power from the AC power supply source

via the first node and transmits the AC power via the resistor to the second node (See Figure 5).

In regard to Claim 6

- Wherein the power rectification unit further comprises a diode (read on by the diode bridge BR310) receiving the AC power from the AC power supply source via the first node and rectifying the AC power, the electrolytic capacitor (C310) receiving the rectified power and outputting smoothed DC power to a transformer, without outputting the smoothed DC power to the power switching unit (The Examiner notes that the output of the capacitor is not provided to the switching unit) (See Figure 5).

In regard to Claim 9

- Transmitting a signal to stop operation of the PWM-IC when the host has not requested provision of the DC power to the electronic machine (See Column 12, Line 45 to Column 14, Line 32) within a predetermined period of time [read on by the time constant of capacitor C345, See Column 13, Lines 18-32] [The Examiner notes that an off signal is produced via the offset voltage].

Claims 2, 4, 7, 10-15, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al. (US 5,961,647) in view of Gregorich (US 3,924,172).

In regard to Claims 2 and 14

An apparatus for controlling a power supply, having a power switching unit, in an electronic machine using a host connected to the electronic machine, the apparatus comprising

- A power rectification unit (80, Fig 6) transforming received alternating current (AC) (via Vin) power into direct current (DC) power and smoothing the DC power (via C1).
- A power switching unit (60 & 40), driven by the AC power and having a pulse width modulation integrated circuit (40) that is switched on or off to control provision of the DC power to the electronic machine (V1, V2, V3) when the host (ie. computer connected to 70) requests provision of DC power to the electronic machine (via 70) (See Column 10, Lines 18-46).
- An AC power connection unit (R6) receiving the AC power (via rectifier 80) and outputting the AC power to the power switching unit (See Figure 6).
- A power supply control unit (70) controlling the operation of the power switching unit, regardless of whether power is received by the power switching circuit (The Examiner notes that the computer will power the power supply control unit (70) regardless of whether the controlled device is powered (See figure 5).

Kim teaches the PWM-IC powered from the output of the DC rectifier and not from the AC power source. Gregorich teaches a power supply system in which the integrated pulse circuitry is powered via the AC input lines and the AC power is converted in DC within the integrated circuit (via 45, figure 2 and see "control pulse circuitry (7), figure 1).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to power the PWM-IC of Kim via the AC supply line and convert the power within the integrated circuit, as taught by Gregorich. The motivation would have been to increase reliability and flexibility of the system by having a rectifier circuit solely dedicated to the pulse circuitry.

Kim further teaches:

In regard to Claim 4

- Wherein the power supply control unit (MICOM) is driven by power received from the host (100) (See Column 9, Lines 17-30).

In regard to Claims 7 & 15

- Wherein the power supply control unit (70) transmits a signal to stop operation of the PWM-IC when the power supply control unit (70) does not receive a request from the host to provide DC power to the electronic machine within a predetermined period of time (the predetermined amount of time being that of a request of power being made) (See Column 10, Lines 18-65).

In regard to Claims 10 & 12

A circuit for controlling a power supply, having a power switching circuit, in an electronic machine using a host connected to the electronic machine, the circuit comprising:

- A power rectification circuit (80, Figure 6) transforming received alternating current (AC) power into direct current (DC) power and smoothing the DC power (via capacitor C1) a power switching circuit (60), driven by the AC power and having a pulse width modulation integrated circuit (PWM-IC, 40) that is switched on or off to control provision of the DC power to the electronic machine when the host (ie. computer) requests provision of DC power to the electronic machine (See Column 10, Lines 18-46).
- An AC power connection circuit (R6) receiving the AC power and outputting the AC power to the power switching circuit (60).
- A power supply control circuit (70) controlling the operation of the power switching circuit, regardless of whether power is received by the power switching circuit [The Examiner notes that the power supply control unit (70) is powered by the host, ie. computer 100 (See Column 10, Lines 18-46)].

In regard to Claim 11

- Wherein the power rectification circuit comprises an electrolytic capacitor (C1) that smoothes rectified power and has a discharge line that is grounded to prevent discharge of charges stored in the electrolytic capacitor (See Figure 6).

In regard to Claim 13

- Wherein the AC power connection circuit comprises: a first node connected to an AC power supply source (read on by the connection between the source (Vin) and the rectifier (80), See fig 6); a second node connected to the power switching circuit (read on

by the connection between resistors R6 & R8); and a resistor (R6) between the first node and the second node.

- Wherein the AC power connection circuit receives the AC power from the AC power supply source via the first node and transmits the AC power via the resistor to the second node.

In regard to Claim 18

A circuit for controlling a power supply, having a power switching circuit, in an electronic machine using a host connected to the electronic machine, the circuit comprising:

- A power rectification circuit (80) having an electrolytic capacitor (C1), the power rectification circuit transforming received alternating current (AC) power into direct current (DC) power and smoothing the DC power, and the electrolytic capacitor having a discharge line that is grounded to prevent discharge of charges stored in the electrolytic capacitor (See figure 6).
- A power switching circuit (60), driven by the AC power and having a pulse width modulation integrated circuit (PWM-IC, 40) that is switched on or off to control provision of the DC power to the electronic machine when the host (ie. computer) requests provision of DC power to the electronic machine.
- An AC power connection circuit (R6) receiving the AC power and outputting the AC power to the power switching circuit.
- A power supply control circuit (70) controlling the operation of the power switching circuit, regardless of whether power is received by the power switching circuit.

Kim teaches the PWM-IC powered from the output of the DC rectifier and not from the AC power source. Gregorich teaches a power supply system in which the integrated pulse circuitry is powered via the AC input lines and the AC power is converted in DC within the integrated circuit (via 45, figure 2 and see "control pulse circuitry (7), figure 1).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to power the PWM-IC of Kim via the AC supply line and convert the power within the integrated circuit, as taught by Gregorich. The motivation would have been to increase reliability and flexibility of the system by having a rectifier circuit solely dedicated to the pulse circuitry.

### *Allowable Subject Matter*

Claims 8 & 16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form for reasons discussed in the Office Action of 8/23/2007.

### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel Cavallari whose telephone number is 571-272-8541. The examiner can normally be reached on Monday-Friday 9:00am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Sherry can be reached on (571)272-2800 x36. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Michael J Sherry/
Supervisory Patent Examiner, Art Unit 2836

/Daniel Cavallari/

July 25, 2008